

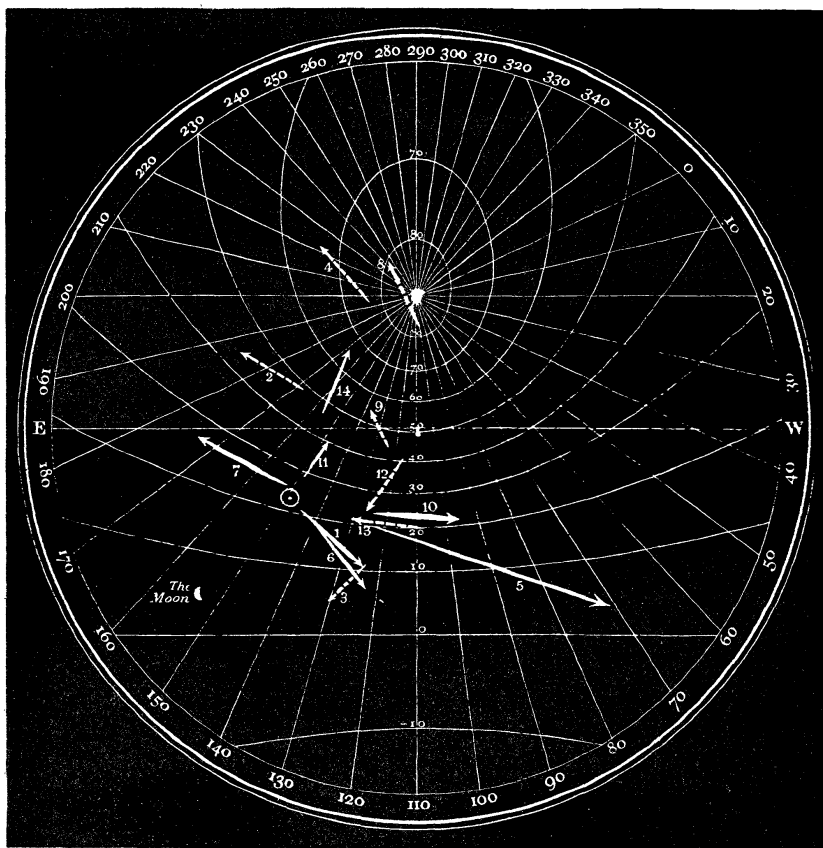
Dec. 1900. *Mr. Antoniadi & Mr. Crommelin, The Leonids, 1900.* 91

unfavourable conditions, meteors fainter than mag. 2 would hardly have been visible, except for a short interval about 12<sup>h</sup> 50<sup>m</sup>.

On November 15 watches were kept for brief intervals, but no meteors were seen by any of the observers.

*The Leonids, 1900 November 14: Observations made at Blackheath, S.E.* By E. M. Antoniadi and A. C. D. Crommelin.

The sky was laden with heavy clouds on the night of November 14–15, but the wide gaps between them were so admirably transparent that stars of the second and third magnitudes in *Canis Major* could be easily seen down to within a very few degrees of the horizon.



Fourteen meteors, of which seven were *Leonids*, were recorded in three hours' watch, from 11<sup>h</sup> 45<sup>m</sup> to 14<sup>h</sup> 45<sup>m</sup> G.M.T. Owing to the clouds it is impossible to give an horary mean of the number of *Leonids* that would have been visible at the time

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with a clear sky. But there is good evidence to show that such mean could scarcely exceed three or four per hour. From  $13^h 7^m$  to  $13^h 47^m$  the sky was quite clear, and yet no *Leonid* was seen during this interval of  $40^m$ .

The following table, which is completed by the annexed figure, will speak for itself :—

*Meteors seen at Blackheath on 1900 November 14 from  $11^h 45^m$  to  $14^h 45^m$ .*

No.	Hour G.M.T.	Track.				Mag.	Notes.	Observer.
		From		To				
		$\alpha$	$\delta$	$\alpha$	$\delta$			
	<sup>h</sup> <sup>m</sup>	<sup>°</sup>	<sup>°</sup>	<sup>°</sup>	<sup>°</sup>			
1	11 46	145	+ 21	125	+ 11	2	Moderately swift.	Leonid. C.
2	12 4	168	+ 48	186	+ 44	3½	Rather slow.	A.
3	12 15	124	+ 11	130	+ 6	3	Moderately slow.	C., A.
4	12 19	195	+ 77	222	+ 67	5	Swift.	A.
5	12 19½	125	+ 20	71	+ 4	3	Swift.	Leonid. C.
6	12 23	140	+ 19	123	+ 8	3½	Rather slow.	Leonid. C., A.
7	13 2	152	+ 26	173	+ 27	2	Rather slow.	Leonid. C.
8	13 4	103	+ 84	244	+ 81	1	Swift.	A.
9	13 42	124	+ 44	136	+ 53	4	Swift; perhaps curved.	A.
10	13 47	124	+ 23	96	+ 22	> 4	Swift; streak.	Leonid. A.
11	13 47¼	149	+ 29	148	+ 40	5½	Swift.	Leonid. A.
12	13 57	117	+ 41	127	+ 24	3	Swift.	A.
13	13 59	108	+ 20	130	+ 21	3	Swift.	A.
14	14 5	157	+ 47	169	+ 65	4	Very swift.	Leonid. A.

No 10 was a grand red globe, brighter than *Jupiter*, and leaving an intense emerald green trail, lasting for  $1\frac{1}{2}^s$ .

By producing backwards the seven *Leonid* tracks we obtain a mean radiant towards

$$\alpha = 149^{\circ}; \delta = +23^{\circ}.$$

The radiant of Nos. 6 and 7 was distinctly a little higher; at

$$\alpha = 149^{\circ}; \delta = +25^{\circ}.$$

This brief account will suffice to show that, in perfect harmony with the investigations of Drs. Downing and Stoney, the recent display of the *Leonids* was an insignificant one, falling far below an ordinary *Perseid* shower.

*Watch for the Leonids 1900, at Markree Observatory.*

By F. W. Henkel, B.A.

Arrangements were made for watches during the nights of November 14, 15, and 16, though in view of the usually unfavourable atmospheric conditions at this time of the year, and the probability of our missing an encounter with a rich part of the stream (alluded to by Mr. Denning in *Nature* for November 8), there arose a feeling of uncertainty as to the result.

On the first night (14-15) rain and unusually high wind continued almost the whole time, so that the sky was completely overcast.

The second night (15-16) was at first somewhat clearer, but rain fell about midnight, and the sky was almost completely hidden by clouds during the remainder of the night. No *Leonids* were seen during the time the watching continued (up to 1 A.M.).

November 16 was a fine day on the whole, and towards midnight the sky became very clear, so that hopes were entertained that something might be seen at last if anything was to be seen at all of the meteors. The sky was watched till about 1 A.M. on the morning of the 17th, when it became overcast in the east, and again at 4 A.M. on the same morning, at which time, however, there were a good many clouds.

Two meteors were seen about 0.30 A.M. (D.M.T.) on the early morning of the 17th, one, fairly bright, with path ending near  $\delta$  *Geminorum*, the other, fainter, near *Regulus*. At 4 A.M. no meteors could be seen, though a careful watch was made for some time.

*Markree Observatory, Collooney, Ireland :*  
1900 November 18.